

AMENDMENTS TO THE CLAIMS

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
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18. (Canceled)
19. (Canceled)
20. (Canceled)
21. (Canceled)
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23. (Canceled)

C2

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

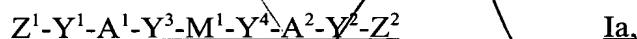
28. (Canceled)

29. (Currently Amended) A process for printing or coating a substrate, which comprises:

- i) applying to said substrate, and, if appropriate, aligning on said substrate, a liquid-crystalline composition as claimed in any one of Claims 19 to 21 to said substrate, and, if appropriate, aligning the liquid-crystalline composition on said substrate comprising:

A) a liquid-crystalline mixture comprising

A1) 44-99.5% by weight based on the total amount of component A) of at least one compound of the formula Ia



and at least one compound of the formula Ib



where the variables, independently of one another, are as defined below:

P is hydrogen, C₁-C₁₅ alkyl, which may be monosubstituted or polysubstituted by methyl, fluorine, chlorine or bromine and in which non-adjacent CH₂-groups may be replaced by oxygen, sulfur, -CO-, -O-CO-, -CO-O- or -O-CO-O-, or a -Y⁸-A⁴-Y⁶-Z⁴ group, where the variables are as defined below.

Z¹ to Z⁴ are polymerizable groups,

Y¹ to Y⁸ are bridging units and are each a single chemical bond,

oxygen, sulfur, -O-CO-, -CO-O-, -O-CO-O-, -CO-NR-, -NR-CO-,

-O-CO-NR-, -NR-CO-O-, or -NR-CO-NR-,

Z¹-Y¹-, Z²-Y²-, Z³-Y⁵- and, if present, Z⁴-Y⁶- are selected from the

group consisting of methacryloyloxy, acryloyloxy and vinyloxy,

R is hydrogen or C₁-C₄ alkyl,

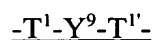
A¹ to A⁴ are spacers having 1 to 30 carbon atoms, in which the carbon

chain may be monosubstituted or polysubstituted by methyl, fluorine,

chlorine or bromine and/or interrupted by ether oxygen, thioether

sulfur or by non-adjacent imino or C₁-C₄ alkylimino groups,

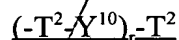
M¹ is a mesogenic group of the formula Ic



Ic,

and

M² is a mesogenic group of the formula Id



Id,

where the variables in the formulae Ic and Id, independently of one

another, are as defined below:

T¹, T^{1'} and T² are divalent saturated or unsaturated carbocyclic or

heterocyclic radicals,

Y⁹ and Y¹⁰ are bridging units as defined for Y¹ to Y⁸ or -CH₂-O-,

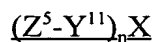
-O-CH₂-, -CH=N-, -N=CH- or -N=N-,

r is a value of 0, 1, 2 or 3,

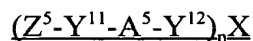
where the radicals T² and Y¹⁰, in the case where r is not 0, may be

identical or different, and

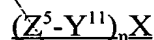
A2) at least one chiral compound selected from the group consisting



Ie,



If,



Ig,

and $(Z^{11}-Y^{11}-A^5-Y^{12}-M-Y^{13})_nX$

Ih,

in which the variables Z^5 and Z^{11} are polymerizable groups, Y^{11} to Y^{13} are bridging units, A^5 are spacers and M are mesogenic groups and which have the same general meaning as the variables Y^1 to Y^8 , A^1 to A^4 and M^1 and M^2 in the formulae Ia and Ib and for M^1 and M^2 in the formulae Ic and Id, n is 1, 2, 3, 4, 5 or 6, X is an n-valent chiral radical where the n groups bonded to the chiral radical X may be identical or different.

B) further additives selected from the group consisting of

b1) photoinitiators,

b2) reactive thinners and

b3) diluents, and

C) if desired, further additives selected from the group consisting of

c1) antifoams and deaerators,

c2) lubricants and flow-control agents,

c3) thermal curing or radiation-curing auxiliaries,

c4) substrate wetting auxiliaries,

c5) wetting and dispersion auxiliaries,

c6) hydrophobicizing agents,

c7) adhesion promoters and

c8) auxiliaries for improving the scratch resistance, and

D) if desired, further additives selected from the group consisting of

d1) dyes and

d2) pigments, and

E) if desired, further additives selected from the group consisting of light, heat and/or oxidation stabilizers that stabilize the liquid-crystalline composition against light, heat and/or oxidation,

and

ii) [if desired,] applying at least one further non-liquid-crystalline print or at least one further non-liquid-crystalline coating, where the non-liquid-crystalline print or non-liquid-crystalline coating contains an IR- or UV-absorbent or fluorescent dye or pigment,

or carrying out steps i) and ii) in the reverse sequence, and

iii) if desired, applying at least one absorption layer and/or protective layer and/or thermally activatable adhesive layer, and

iv) curing the ~~prints and/or coatings~~ liquid-crystalline composition produced in step i) and/or, ~~if carried out, the non-liquid-crystalline print or non-liquid crystalline coating produced in step ii) and/or step iii), where the curing can take place either directly after application of each individual print or each individual coating in step i) and, if carried out, step ii) and/or step iii) or simultaneously.~~

30. (Previously Added) The process as claimed in Claim 29, wherein said substrate is at least partially transparent in the wavelength range from 250 to 1300 nm.

31. (Previously Added) The process as claimed in Claim 29, in which said substrate may be precoated in one or more colors.

32. (Currently Amended) A process for making counterfeiting-proof markings comprising the process as claimed in Claim 29, wherein said liquid-crystalline composition in step i) is a colored and photochemically polymerizable liquid-crystalline composition and step i) comprises polymerizing said liquid-crystalline composition by UV-light; ~~wherein step ii) comprises further applying prints or coatings containing IR- or UV-absorbent or fluorescent dyes or pigments, and wherein step iii) comprises applying a final absorption layer.~~

33. (Previously Added) The process as claimed in Claim 29 wherein in steps i) and, if used step ii) prints and coatings are applied alternately or in any sequence and number.

34. (Canceled)

35. (Previously Added) A substrate which has been printed or coated by the process as claimed in Claim 29.

36. (Previously Added) A substrate which has been printed or coated by the process as claimed in any one of Claims 30 to 32.

37. (Previously Added) A substrate which has been printed or coated by the process as claimed in Claim 33.

38. (New) A multilayer structure produced by the process of Claim 29 and comprising

the substrate; and, on the substrate,

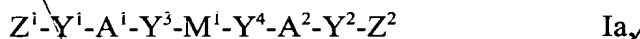
a liquid crystalline layer comprising the liquid-crystalline composition, and

a non-liquid crystalline layer comprising the IR- or UV-absorbent or fluorescent dye or pigment.

49
39. (New) A liquid-crystalline composition comprising

A) a liquid-crystalline mixture comprising

A1) 44-99.5% by weight based on the total amount of component A) of at least one compound of the formula Ia



and at least one compound of the formula Ib



where the variables, independently of one another, are as defined below:

P is hydrogen, or C₁-C₁₅ alkyl, which may be monosubstituted or polysubstituted by methyl, fluorine, chlorine or bromine and in which non-adjacent CH₂-groups may be replaced by oxygen, sulfur, -CO-, -O-CO-, -CO-O- or -O-CO-O-, where the variables are as defined below,

Z¹ to Z³ are polymerizable groups,

Y¹ to Y⁵ and Y⁷ are bridging units and are each a single chemical bond, oxygen, sulfur, -O-CO-, -CO-O-, -O-CO-O-, -CO-NR-, -NR-CO-, -O-CO-NR-, -NR-CO-O-, or -NR-CO-NR-,

Z¹-Y¹-, Z²-Y²-, and Z³-Y⁵- are selected from the group consisting of methacryloyloxy, acryloyloxy and vinyloxy,

R is hydrogen or C₁-C₄ alkyl,

A¹ to A³ are spacers having 1 to 30 carbon atoms, in which the carbon chain may be monosubstituted or polysubstituted by methyl, fluorine, chlorine or bromine and/or interrupted by ether oxygen, thioether

sulfur or by non-adjacent imino or C₁-C₄ alkylimino groups,

M¹ is a mesogenic group of the formula Ic



and

M² is a mesogenic group of the formula Id



where the variables in the formulae Ic and Id, independently of one another, are as defined below:

T¹, T^{1'} and T² are divalent saturated or unsaturated carbocyclic or heterocyclic radicals,

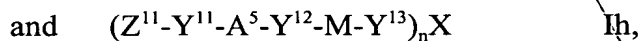
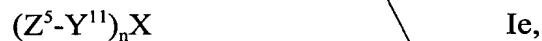
Y⁹ and Y¹⁰ are bridging units as defined for Y¹ to Y⁵ and Y⁷ or

-CH₂-O-, -O-CH₂-, -CH=N-, -N=CH- or -N=N-,

r is a value of 0, 1, 2 or 3,

where the radicals T² and Y¹⁰, in the case where r is not 0, may be identical or different, and

A2) at least one chiral compound selected from the group consisting



in which the variables Z⁵ and Z¹¹ are polymerizable groups, Y¹¹ to Y¹³

are bridging units, A⁵ are spacers and M are mesogenic groups and

which have the same general meaning as the variables Y¹ to Y⁵ and Y⁷,

A¹ to A³ and M¹ and M² in the formulae Ia and Ib and for M¹ and M² in

the formulae Ic and Id, n is 1, 2, 3, 4, 5 or 6, X is an n-valent chiral radical where the n groups bonded to the chiral radical X may be identical or different,

- B) further additives selected from the group consisting of
- b1) photoinitiators,
 - b2) reactive thinners and
 - b3) diluents, and
- C) if desired, further additives selected from the group consisting of
- c1) antifoams and deaerators,
 - c2) lubricants and flow-control agents,
 - c3) thermal curing or radiation-curing auxiliaries,
 - c4) substrate wetting auxiliaries,
 - c5) wetting and dispersion auxiliaries,
 - c6) hydrophobicizing agents,
 - c7) adhesion promoters and
 - c8) auxiliaries for improving the scratch resistance, and
- D) if desired, further additives selected from the group consisting of
- d1) dyes and
 - d2) pigments, and
- E) if desired, further additives selected from the group consisting of light, heat and/or oxidation stabilizers that stabilize the liquid-crystalline composition against light, heat and/or oxidation,

where additives B), C), D) and E) are dispersed throughout the liquid-crystalline mixture A).

⁵⁰
40. (New) The liquid-crystalline composition as claimed in Claim 39, having a viscosity of from 0.5 to 10.0 Pa·s at 20°C.

⁵¹
41. (New) A printing ink comprising the liquid-crystalline composition of Claim 39.

⁵²
42. (New) A process comprising printing or coating a substrate with a composition comprising the liquid-crystalline composition as claimed in Claim 39.

⁵³
43. (New) An electro-optical component comprising the liquid-crystalline composition as claimed in Claims 39.

⁵⁴
44. (New) A process comprising counterfeit-proof marking articles with a composition comprising the liquid-crystalline composition as claimed in Claim 39.

⁵⁵
45. (New) A process comprising coating a substrate with a composition comprising the liquid-crystalline composition as claimed in Claim 39 to produce a film or coating which selectively reflects light in the wavelength range of from 250 to 1300 nm.

⁵⁶
46. (New) A polymer or polymerized film obtained by polymerizing the liquid-crystalline composition as claimed in Claim 39.

⁵⁷
47. (New) An optical filter, polarizer, decoration, counterfeiting-proof marking or reflection medium for the selective reflection of radiation in the wavelength range of from 250 to 1300 nm comprising the polymer or polymerized film as claimed in Claim 46.

Cont.

⁴⁸
48. (New) A process for printing or coating a substrate, which comprises:

- i) applying the liquid-crystalline composition as claimed in Claim 39 to the substrate, and, if appropriate, aligning the liquid-crystalline composition on the substrate, and
 - ii) if desired, applying at least one further non-liquid-crystalline print or at least one further non-liquid-crystalline coating,
- or carrying out steps i) and ii) in the reverse sequence, and
- iii) if desired, applying at least one absorption layer and/or protective layer and/or thermally activatable adhesive layer, and
 - iv) curing the prints and/or coatings produced in step i) and, if carried out, step ii) and/or step iii), where the curing can take place either directly after application of each individual print or each individual coating in step i) and, if carried out, step ii) and/or step iii) or simultaneously.

⁴⁹
49. (New) The process as claimed in Claim 48, wherein said substrate is at least partially transparent in the wavelength range from 250 to 1300 nm.

⁵⁰
50. (New) The process as claimed in Claim 48, in which said substrate may be precoated in one or more colors.

⁵¹
51. (New) A process for making counterfeiting-proof markings comprising the process as claimed in Claim 48, wherein said liquid-crystalline composition in step i) is a colored and photochemically polymerizable liquid-crystalline composition and step i) comprises polymerizing said liquid-crystalline composition by UV-light; wherein step ii) comprises further applying prints or coatings containing IR- or UV-absorbent or fluorescent dyes or pigments, and wherein step iii) comprises applying a final absorption layer.

⁶²
52. (New) The process as claimed in Claim 48, wherein in step i) and, if used step ii) prints and coatings are applied alternately or in any sequence and number.

⁶³
53. (New) A substrate which has been printed or coated by the process as claimed in Claim 48.

⁶⁴
54. (New) A substrate which has been printed or coated by the process as claimed in any one of Claims 49 to 51.

⁶⁵
55. (New) A substrate which has been printed or coated by the process as claimed in Claim 52.
